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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 09/608,395 | 06/30/2000 | Per-Ake Larson | MSI-479US | 9668 |
| 22801 | 7590 | 11/16/2004 | EXAMINER | |
| LEE & HAYES PLLC 421 W RIVERSIDE AVENUE SUITE 500 SPOKANE, WA 99201 | | | NGUYEN, CINDY | |
| | | | ART UNIT | PAPER NUMBER |
| | | | 2161 | |

DATE MAILED: 11/16/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

| | | | |
|------------------------------|--------------------------------------|--------------------------------------|--|
| Office Action Summary | Application No. 09/608,395 | Applicant(s) LARSON ET AL. | |
| | Examiner Cindy Nguyen | Art Unit 2171 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 02 August 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-26 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-6 and 8-25 is/are rejected.
- 7) ☐ Claim(s) 7, 26 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 June 2000 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) ° | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

This is in response to amendment filed on 08/02/04.

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 08/02/04 has been entered.

1. Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1, 11, 12 and 21 are rejected under 35 U.S.C. 102(b) as being anticipated by Leo et al. (US 6430550) (Leo).

In consideration of claims 1 and 21, Leo discloses: A method and computer program for processing a database query comprising:

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Partially pre-aggregating records in a database (table) according to a single grouping column¹ to provide a result that contains at least two records having like grouping column value (col. 5, lines 7-20, Leo);

aggregating records derived from the partial pre-aggregation to provide a result that contains records having unique grouping column values (col. 6, lines 55-67, Leo).

Regarding claim 11, the limitations of this claim have been noted in the rejection of claim 1. Applicant's attention is directed to the rejection of claim 1 above. In addition Leo discloses: computer programmed to perform the method recited in claim 1 9 (see col. 2, lines 62-65, Leo).

Regarding claim 12, the limitations of this claim have been noted in the rejection of claim 1. Applicant's attention is directed to the rejection of claim 1 above. In addition, Leo discloses: A relational database system, comprising: memory for storing a record store (506, fig. 5, Leo), the memory having a portion available for query processing (504, fig. 5, Leo).

3. *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

¹ A single grouping column as a distinct-key column.

4. Claims 2-6, 8-10, 13-19, 20 and 23-25 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Leo (U.S.5781896) in view of Sharma et al. (U.S. 5511190) (Sharma).

Regarding claims 2 and 13, all the limitations of this claim have been rejected in claim 1 and 12, in addition, Leo discloses: wherein the partially pre-aggregating further comprises:

maintaining a record store in memory , the record store having one record for each different grouping column value encountered in the operation(col. 5, lines 56-67, Leo);

Leo is silent as to the provision of receiving a new record after the final aggregation step is performed. However, Sharma discloses receiving a new record (312, fig. 3, Sharma); combining the new record with a record having the same grouping column value, if such a record exists (315, 316, fig. 3, Sharma); and adding the new record to the record store in the memory if there is no record in the record store that has the same grouping column value as the new record (317, fig. 3, Sharma). Because Leo's system is designed to be repeated by a user and is dynamic in nature, it would have been obvious to one of ordinary skill in the art to receive a new entry in Leo as taught by Sharma, so as to facilitate continuous and expanded use of further search queries.

As per claim 3, the limitations of this claim have been noted in the rejection of claim 2. Applicant's attention is directed to the rejection of claim 2 above. In addition, Leo/Sharma disclose: adding additional new records to the record store until the record store reaches a capacity such that it can accept no new records (see col. 10, lines 60 to col. 11, lines 31, Sharma); outputting one or more records from the record store to a subsequent database operator (see col. 327, fig. 3, Sharma). Therefore, at the time the invention was made, it would have been obvious to a person of ordinary skill in the art to include a method of processing the query steps of aggregation using hashing and partitioning to process

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until there is no more free space in memory in Leo, as taught by Sharma. The motivation being to have enabled a user to provide a method and system in a computer system to identify grouping column contents into a result value for the identified grouping column contents reducing the disk access overhead incurred in performing the aggregation.

Regarding claim 4, the limitations of this claim have been noted in the rejection of claim 3. Applicant's attention is directed to the rejection of claim 3 above. In addition, Leo/Sharma discloses: wherein after the one or more records have been output to the subsequent database operator, the adding and outputting are repeated until there are no new records to process (see col. 11, lines 46-55, Sharma).

Regarding claim 5, the limitations of this claim have been noted in the rejection of claim 4. Applicant's attention is directed to the rejection of claim 4 above. In addition, Leo/Sharma discloses: wherein any records remaining in the record store after there are no new records to process are output to the subsequent database operator (327, fig. 3, Sharma).

Regarding claim 6, the limitations of this claim have been noted in the rejection of claim 3. Applicant's attention is directed to the rejection of claim 3 above. In addition, Leo/Sharma discloses: wherein the subsequent database operator is a join (group procedure in fig. 3, Sharma).

Regarding claim 10, all the limitations of this claim have been rejected in claim 1. Applicant's attention is directed to the rejection of claims 1 and 6 above. In addition, Srivastava et al. disclose: one or more computer-readable media having computer-executable instruction (504, fig. 5, Leo).

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Regarding claim 8, the limitations of this claim have been noted in the rejection of claim 1. Applicant's attention is directed to the rejection of claim 1 above. In addition Leo/Sharma discloses: wherein the partially pre-aggregating includes utilizing a hashing function (see col. 10, lines 1-6, Sharma).

Regarding claim 9, the limitations of this claim have been noted in the rejection of claim 1. Applicant's attention is directed to the rejection of claim 1 above. In addition Leo/Sharma discloses: wherein the partial pre-aggregating creates a record store in memory, and wherein the method further comprises utilizing the record store in memory for one or more other database operators (aggregation, col. 11, lines 1-12, Sharma).

As per claim 13, all the limitations of this claim have been noted in the rejection of claim 2. It is therefore rejected as set forth above. In additional, Leo/Sharma discloses: receive an input record from the non-volatile memory (see 54, Fig. 7, Sharma).

As per claim 14, all the limitations of this claim have been noted in the rejection of claims 3 and claim 13. It is therefore rejected as set forth above.

As per claim 15, all the limitations of this claim have been noted in the rejection of claims 4 and 5. It is therefore rejected as set forth above.

As per claim 16, all the limitations of this claim have been noted in the rejection of claim 6. It is therefore rejected as set forth above.

As per claim 17, all the limitations of this claim have been noted in the rejection of claim 9. It is therefore rejected as set forth above.

As per claim 18, all the limitations of this claim have been noted in the rejection of claim 7. It is therefore rejected as set forth above.

As per claim 19, all the limitations of this claim have been noted in the rejection of claim 8.

It is therefore rejected as set forth above.

Regarding claim 20, all the limitations of this claim have been rejected in claim 12. Applicant's attention is directed to the rejection of claim 12 above. In additional, Leo/Sharma discloses: wherein the query processor is further configured to utilize hashing and partitioning to perform the partial pre-aggregation (col. 12, lines 33-44, Sharma).

As per claim 22, all the limitations of this claim have been noted in the rejection of claims 2, 3 and 4. It is therefore rejected as set forth above.

Regarding claim 23, all the limitations of this claim have been rejected in claim 12. Applicant's attention is directed to the rejection of claim 12 above. In additional, Leo/Sharma discloses: further comprising database operator code that utilizes the record store for input (col. 5, lines 50-53, Leo).

Regarding claim 24, most of the limitations of this claim have been noted in the rejection of claims 1 and 21. Applicant's attention is directed to the rejection of claims 1 and 21 above. In addition, Leo/Sharma discloses: executable instructions (see Fig. 7 and corresponding text, Leo), when executed on a computer, perform the following steps: receiving a stream of input records (312, 327, fig. 3, Leo);

aggregating each input record in the stream as it is received to create a record store (see col. 7, lines 49-57, Leo).

Outputting the records in the record store after the join (327, fig. 3, Sharma);

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Aggregating the records output from the join; and Wherein the records output from the join include at least two records that have an identical grouping column value in the single grouping column (col. 5, lines 8-20, Leo).

As per claim 25, all the limitations of this claim have been noted in the rejection of claims 3 and 24, above. It is therefore rejected as set forth above.

Allowable Subject Matter

Claims 7 and 26 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: The prior art of record and that encountered while searching for the claimed invention fails to anticipate and/or suggest: A method for processing a database query comprising: estimating the costs and benefits of the partial pre-aggregation, and partially pre-aggregating the records only if the estimating indicates that the benefits are greater than the costs as recited in claim 7.

The prior art of record and that encountered while searching for the claimed invention fails to anticipate and/or suggest: a relational database computer program stored on a computer-readable medium, the relational database computer program comprising computer-executable instructions that, when executed on a computer, perform the step of performing the aggregation

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prior to the join only if a determination is made that it is optimal to perform an aggregation prior to the join as recited in claim 26.

5. *Contact Information*

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Cindy Nguyen whose telephone number is 703-305-4698. The examiner can normally be reached on M-F: 8:00-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Safet Metjahic can be reached on 703-308-1436. The fax phone numbers for the organization where this application or proceeding is assigned are 703-746-7239 for regular communications and 703-746-7240 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-3900.


Cindy Nguyen
November 2, 2004


SAFET METJAHIC
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER